

## Supplemental Table S1. Strain list

| Strains | Genotypes   |
|---------|---|
| MSY832  | <i>MAT<math>\alpha</math></i> , <i>ho::LYS2</i> , <i>ura3</i> , <i>leu2::hisG</i> , <i>trp1::hisG</i> , <i>lys2</i>                                   |
| MSY833  | <i>MATa</i> , <i>ho::LYS2</i> , <i>ura3</i> , <i>leu2::hisG</i> , <i>trp1::hisG</i> , <i>lys2</i>   |
| NKY1303 | <i>MATa</i> , <i>ho::LYS2</i> , <i>ura3</i> , <i>leu2::hisG</i> , <i>lys2</i> , <i>his4B-LEU2</i> , <i>arg4-bgl</i>                                   |
| NKY1543 | <i>MAT <math>\alpha</math></i> , <i>ho::LYS2</i> , <i>ura3</i> , <i>leu2::hisG</i> , <i>lys2</i> ,<br><i>his4X-LEU2::BamHI-URA3</i> , <i>arg4-nsp</i> |
| KKY276  | <i>MATa/<math>\alpha</math></i> , <i>nuc1::HygB/nuc1::HygB</i> ,<br><i>HIS4::LEU2-(BamHI)/his4X::LEU2-(NgoMIV)-URA3</i>                               |
| KKY1571 | KKY276 with <i>rad61::KamMX4/rad61::KamMX4</i>  |
| KSY63   | MSY832 with <i>rad61:: KanMX6</i>   |
| KSY64   | MSY833 with <i>rad61:: KanMX6</i>   |
| KSY97   | MSY832 with <i>MPS3-GFP::KanMX6</i>   |
| KSY98   | MSY833 with <i>MPS3-GFP::KanMX6</i>   |
| KSY42   | MSY832 with <i>MPS3-GFP::KanMX6,rad61::KanMX6</i>   |
| KSY43   | MSY833 with <i>MPS3-GFP::KanMX6,rad61::KanMX6</i>   |
| KSY271  | MSY832 with <i>MPS3-GFP::KanMX6,rec8::KanMX6</i>  |
| KSY272  | MSY833 with <i>MPS3-GFP::KanMX6,rec8::KanMX6</i>  |
| KSY61   | MSY832 with <i>RAP1-GFP::LEU2</i>   |
| KSY62   | MSY833 with <i>RAP1-GFP::LEU2</i>   |
| KSY123  | MSY832 with <i>RAP1-GFP::LUE2,rad61:: KanMX6</i>  |
| KSY124  | MSY833 with <i>RAP1-GFP::LUE2,rad61:: KanMX6</i>  |
| KSY216  | MSY832 with <i>CenV-GFP::Clonat</i>   |
| KSY265  | MSY832 with <i>CenV-GFP::Clonat, rad61::KanMX6</i>  |
| KSY404  | MSY832 with <i>CenV-GFP::Clonat, ndt80::LEU2</i>  |
| KSY405  | MSY833 with <i>CenV-GFP::Clonat, ndt80::LEU2</i>  |
| KSY448  | MSY832 with <i>CenV-GFP::Clonat, rad61::KanMX6, ndt80::LEU2</i>   |
| KSY449  | MSY833 with <i>CenV-GFP::Clonat, rad61::KanMX6, ndt80::LEU2</i>   |
| KSY315  | MSY832 with <i>leu2::LacI-GFP::Clonat, trp1::226XlacO::KanMX4</i> ,<br><i>telIV:: 226XlacO::KanMX4</i>  |
| KSY316  | MSY833 with <i>leu2::LacI-GFP::Clonat, trp1::226XlacO::KanMX4</i> ,<br><i>telIV:: 226XlacO::KanMX4</i>  |

MSY832 with *leu2::LacI-GFP::Clonat*, *trp1::226XlacO::KanMX4*,  
 KSY343 *telIV:: 226XlacO::KanMX4*, *rad61::KanMX6*  
 MSY833 with *leu2::LacI-GFP::Clonat*, *trp1::226XlacO::KanMX4*,  
 KSY344 *telIV:: 226XlacO::KanMX4* *rad61::KanMX6*  
 KSY361 NKY1543 with *rad61::KanMX6*  
 KSY365 NKY1303 with *rad61::KanMX6*  
*MATa/MAT $\alpha$  leu2"*, *ura3"*, *nuc1::hygB"*,  
 KKY885 *HIS4::LEU2-(BamHI;+ori)/his4-x::LEU2-(NgoMIV+ori)--URA3*,  
*rad50S::URA3"*  
*MATa/MAT $\alpha$  leu2"*, *ura3"*, *nuc1::hygB"*,  
 KKY1835 *HIS4::LEU2-(BamHI+ori)/his4-x::LEU2-(NgoMIV+ori)--URA3*,  
*rad61::KanMX4*, *rad50K181::URA3*

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**Supplemental Table S2. Primer list**

| Strains                         | DNA sequence   |
|---------------------------------|--|
| <i>rad61::KanM</i><br><i>X6</i> | 5'-AAAAC TGC GCAGAGAACTATCGCAAACGAAACCATCTT<br>CTTACCCTAAAGCATCCTGTTTCTGAAAAA cgtacgctgcaggtcga<br>c<br><br>5'-TCTGGACAATTTTTCAATAGTTGCCAGCAGGGTGAAGATG<br>AAGCCAGGCTATGTTCAATGTATGCTTTCT atc gat gaattc gagctc<br>g |
| <i>CARC1</i>                    | 5'- TAAAGCATTGACGCCAGAGC<br><br>5'- CGATGGAACCCCTATTGATC   |
| <i>CARC2</i>                    | 5'- TGTCGCCGAAGAAGTTAAGA<br><br>5'- ATGGTCAGGTCATTGAGTGT   |
| <i>CARC3</i>                    | 5'- TGCAAGGATTGGTGATGAGA<br><br>5'- TAAATGGATTGGATGTCGCG   |
| <i>CEN3</i>                     | 5'- TCCGCTTATAGTACAGTACC<br><br>5'- ATGAGCAAACCTTCCACCAG   |
| <i>CEN4</i>                     | 5'- ACATATATTACACGAGCCAG<br><br>5'- CTCGAACTGATCTATAATGC   |

## Supplemental Figure legends

### **Figure S1. The effect of the *rad61/wpl1* mutation on DSBs at various loci.**

- (A) Southern blotting analysis of DSBs in the *rad50S* background. Genomic DNAs from either *rad50S* (KKY885) or *rad50S rad61* mutant (KKY1835) cells were analysed for DSB at the *HIS4-LEU2*, *CYC3*, *BUD23*, and *ARG4* loci.
- (B) Quantitation of DSB species shown in (A). The values show the mean of three independent experiments with S.D. *rad50S* cells, blue circles; *rad50S rad61/wpl1* cells, red circles.

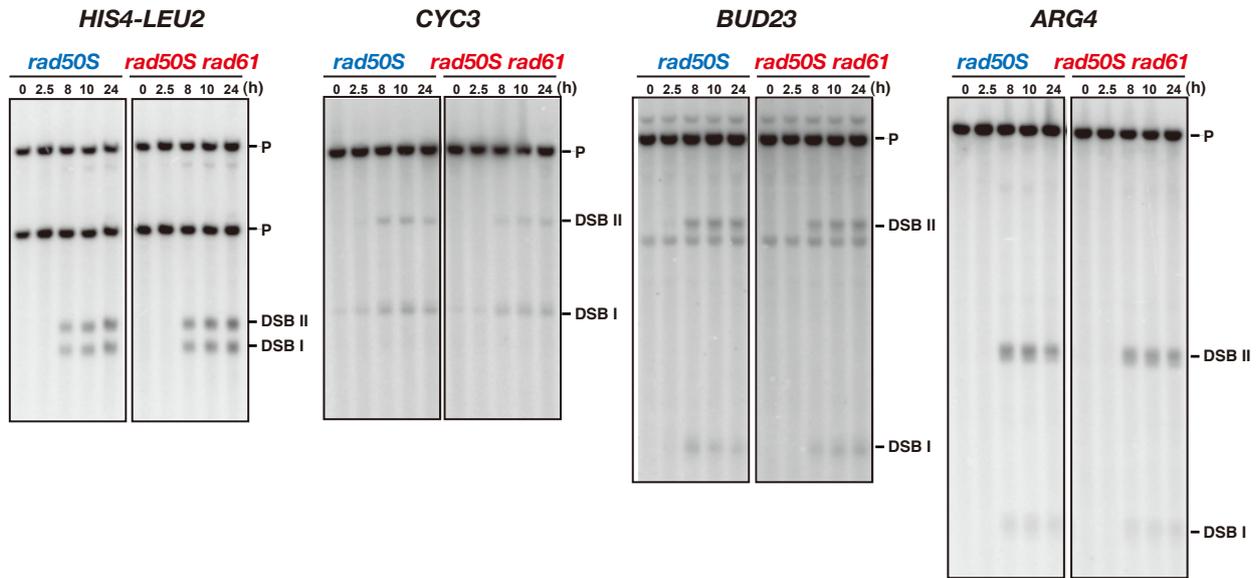
### **Figure S2. The *rad61/wpl1* mutant cells show hyper-compaction of meiotic chromosomes.**

(A) Immunostaining analysis of a SC protein, Zip1 (red), was carried out in wild type and mutant strains. Representative images are shown for each strain. Wild type, MSY832/833; and *rad61/wpl1* (KSY63/64). The bar indicates 2  $\mu\text{m}$ .

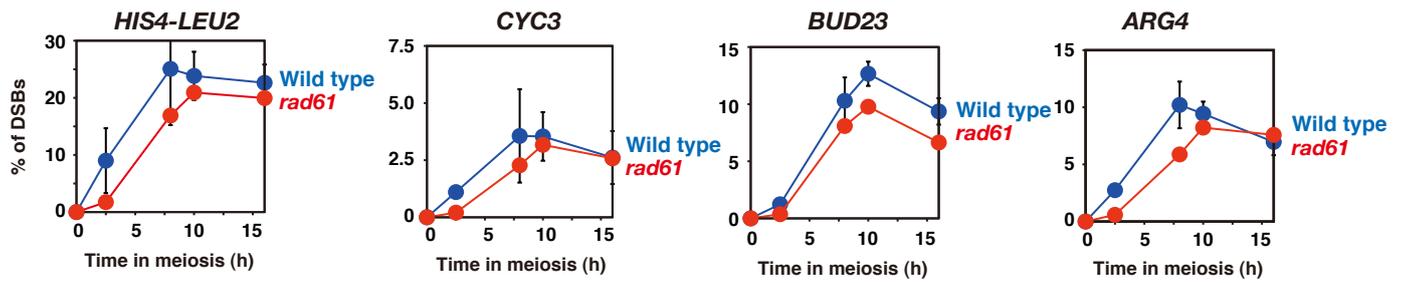
(B) Immunostaining analysis of chromosome proteins, Red1 (red) and Rec8 (green), was carried out in wild type (MSY832/833) and the *rad61/wpl1* mutant (KSY63/64) strains. Representative kinetics and images are shown for each strain. The bar indicates 2  $\mu\text{m}$ .

# Kiran et al. Figure S1

**A**



**B**



# Kiran et al. Figure S2

